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## PART 1.—ORIGINAL ARTICLES.

*Notes from the History of my Parrot, in reference to the Nature of Language.* BY SAMUEL WILKS, M.D., F.R.S.

Of all the attributes of man which have been considered sufficiently distinctive to separate him from the lower animals, that of speech has been regarded as of the first importance. It has been looked upon as so essentially dependent upon human intelligence as in itself to constitute a sufficient line of separation between man and all living creatures below him. By none has this position been more strongly upheld than by Max Müller, who maintains that speech is a faculty of man which distinguishes him from all other creatures. This, of course, is true in a general sense; but as every attribute of man is at the present time undergoing a more complete analysis than has ever before been attempted, the dictum may be found not to be so absolutely correct, as at first sight appears; for it may be remembered that the subject of language has hitherto been treated by scholars and men of letters, who have discussed its various forms in relation to a given basis, whereas, at the present time, an endeavour is being made to proceed a step further towards the origin of language by its investigation from a physiological or scientific standpoint. If this be done, and we study the nature of language, as observed in the savage or the infant, we may perhaps discover that it is not altogether so different from what we may call the language of the lower animals. There is so much in man which is common to the creatures below him, that it is impossible to discuss rightly many of his propensities, affections and passions, without considering the form or character which these take in similar organisations. It is not surprising, therefore, that the

subject of language should have been made a debating ground for the discussion of the points of difference between man and animals.

If this were the place to undertake a thorough investigation of this interesting subject, one ought, in the first place, to define the meaning of the word language, or ask what is usually meant by the expression. If it indicates articulate language only, the subject is much narrowed, but neither those who regard language as peculiar to man nor their opponents, would, I apprehend, wish to limit the term to this definition, for if the object of the former be to prove, by the possession of language, man's superiority, the argument would be of no great value if it were found that animals had other and equally comprehensive methods of communicating knowledge to one another. But in no sense can language, or the mode of communication between animals be restricted to articulate language, for even with regard to the human family such a limited view is altogether inadequate, since knowledge and ideas are conveyed by various other means than by speech. The most obvious example—that of the deaf and dumb, enables us at once to see how ideas are conveyed by the movements of the fingers, or by gestures. These deaf mutes have not been endowed with what has been styled the distinctive faculty of man, yet they are intelligent beings,—certainly not idiots. Even amongst the most eloquent races movements and gesticulations materially assist in the use of language, in fact, form a part of it. The mere act of talking expresses often only half the speaker's sentiments, the other half is made up of manner and style. Amongst the French, gesticulation is of essential value in putting force into their argument; indeed, it is often equivalent, not only to various states of mind, but even to monosyllables and short phrases, so that the animated conversation of two Frenchmen in the dark would lose much of its brilliancy and force. Indeed, Captain Burton states that there is a tribe in North America which possesses so scanty a vocabulary that its people cannot converse in the dark. It wants, therefore, but a moment's consideration to see how much of the force and value of conversation, to say nothing of public speaking, depends upon gesticulation and various movements of the body. The look, the attitude, the gesture become often vastly more expressive than mere words, as poets have ever delighted to pourtray in their descriptions of the meetings of lovers speaking different languages, and in other scenes.

Titus Andronicus, in meeting with his daughter, whose hands had been lopped off and tongue cut out, exclaims—

“Speechless complainer, I will learn thy thought;  
 In thy dumb action will I be as perfect  
 As begging hermits in their holy prayers:  
 Thou shalt not sigh, nor hold thy stumps to heaven,  
 Nor wink, nor nod, nor kneel, nor make a sign,  
 But I of these will wrest an alphabet,  
 And, by still practice, learn to know thy meaning.”

We all feel that language without the animated face and the various actions of the body would be as monotonous as the sound issuing from a phonograph. Indeed altogether different interpretations may be given to a speech by the manner of its deliverance. The movements of the hands themselves will express a variety of emotions, as is well described by Quintilian, in a passage quoted by Sir C. Bell:—“*Nam ceteræ partes loquentem adjuvant, hæ (the hands) prope est ut dicam, ipsæ loquuntur. His poscimus, pollicemur, vocamus, dimittimus, minamur, supplicamur, abominamur, timemus; gaudium, tristitiam, dubitationem, confessionem, penitentiam, modum, copiam, numerum, tempus, ostendimus,*” &c. Must, then, the movement of the hand be regarded as a special gift of man, or not rather as a mere expression of the mind within him? I know a little girl, who is an epileptic, and who has never uttered a word, but her hearing is good, and she understands all that is said to her by her parents and the other children. The case may be contrasted with one sometimes witnessed in lunatic asylums—that of a demented person who will repeat any word or sentence after the speaker. The mere spoken words may have no corresponding ideas, whilst the dumb man, by the movements of his arms, may be truly eloquent. It seems clear, then, that speech and intelligence are by no means co-extensive in meaning, and that rational communication may be conducted between creatures by various methods. What language, indeed, is so expressive as laughing, crying, moaning, and various other noises, many of which also belong to the lower animals?

That the language of a civilised nation is the result of growth I believe is admitted by all, even by those who declare its basis or framework to have been implanted in man's nature, for they compare its richness in a cultivated people with its poverty in a savage race, whose vocabulary scarcely numbers a hundred words. I have no wish, however, to enter upon the question of the origin of language, although

I consider the arguments in favour of its beginning from the imitation of natural sounds to be based on truth, and I have always thought that the invention of words by infants and illiterate people tends to corroborate this view. I never hear, for example, an ignorant woman say she has been much "worreted" but I feel she is using a more expressive word than "worried;" or when a boy says he would like to "squench" his thirst that he is much more likely to satisfy his desire than if he only wanted to "quench" it.

It has often been asked whether animals have a different vocal apparatus from man. I believe there is no anatomical or physiological difference between them. There are vocal cords, muscles, and nerves of the same description in both; and as regards the nerve which stimulates the muscles of the larynx, it is composed of two elements having two different functions in animals as well as in man, the one nerve proceeding from the breathing centre of the spinal cord and the other from the talking centre in correspondence to the double function of the larynx, this being both a respiratory and vocal organ. This difference of function is seen in cases of disease, as in bulbar paralysis, where the larynx is opened during the respiratory act, though the patient has lost all voluntary power over it. He can breathe, but he cannot talk. This is also true of the lower animals, for physiologists inform us that on cutting a nerve which goes to form a part of the recurrent laryngeal, the animal at once ceases to cry, though continuing to breathe as usual. This proves therefore the existence of a voluntary nerve to the larynx in animals as well as in man. Of course there is some special organisation whereby one animal can utter one cry and another another, but whether this lies in the larynx itself, or in the higher nerve centre, or in both together, I cannot say. We know that the tone of the human voice differs in different nations and different individuals, and also that this quality is inherited. We need scarcely be told, however, that an animal has a special voluntary nerve for the larynx apart from the simply organic one used in breathing, since we know what power some birds have over their vocal apparatus. The starling, for example, will copy the note of every other bird with which it associates. Our belief moreover in the similarity of the animal to the human organization is confirmed, when we consider that so uniform is the cry uttered by animals, to express their feeling, that

the cry of a bird in distress or a dog suddenly injured appeals to the sympathies of all who hear it.

That the mechanism of the muscles and nerves is the same in all animals is shown by the acts of barking or braying, where a distinct rhythmical action may be perceived. Rhythm is a necessity of muscular action; contraction and relaxation must alternate. If any movement is to be produced by contraction of a muscle, the latter must again relax before it can undergo a second contraction. Therefore, in the mechanism of speech there must be constant movements of the chest, larynx, and mouth; and in consequence speech cannot consist of a continual flow of words, but must be broken up into syllables, with a certain definite accent and rhythm. The cries of animals display rhythm; and the movements of their bodies, when taught to follow the notes of music, show also that they can appreciate or are cognisable of muscular rhythm throughout the whole system. Then, again, I believe it has been said that in all animals sounds are produced in the larynx, but that articulate language in man is moulded by his tongue and mouth. This may be true in a measure, but is not absolutely correct, as may be observed by watching the movements of an animal's mouth when producing a sound, to say nothing of those of the imitative birds.

Now, if we take language as meaning the mode of communication by utterances produced in the vocal apparatus as well as by gestures, I think we can scarcely refrain from admitting that animals possess language. They communicate with one another by means of sounds intelligible to themselves, and in the case of the dog and his master an altogether new language grows up, which they both understand. Every one who has kept a dog knows how intimate is the understanding and intercourse between himself and the animal by means of words, looks, and gestures.

Then, again, it cannot but be remembered that in the human being language has been learned by imitation through the organ of hearing, and therefore all deaf children are necessarily dumb. Now, if language were a natural possession of man, and perfectly independent of other conditions, he ought to speak though he cannot hear. If it be said that hearing is a necessity for the sake of cadence and the regulation of the voice, even this statement shows that the larynx alone is not sufficient to cause speech in an intelligent being.

But arguments are superfluous to show that speech is learned by imitation through the organ of hearing; it is the method by which talking is acquired by all infants, for where they have been debarred from hearing the human voice, as in the case of the so-called wild children (if the stories are authentic) who have associated only with the beasts of the field, they have merely uttered cries and noises, notwithstanding that all their senses and appetites have retained their integrity. They do not speak because they have not heard the human voice.

A child hears a sound or a word in connection with a particular object; it imitates the sound, and afterwards uses it in association with that object. This seems to be the mode of acquiring language, and it is not unreasonable to suppose that in the infancy of the world, language came about also through the organ of hearing, thus tending to corroborate the doctrine of onomatopœia, or the origin of language by the imitation of natural sounds.

I have introduced these remarks before giving an illustration of speech in animals, because I think it is necessary to clear the ground to enable us to see in what direction our enquiries should be made and what is the real question before us. It is very certain that speech is not a simple process, but is dependent upon brain organisation, upon the perfection of a vocal apparatus, and also upon the integrity of hearing. It may also be asserted that language is not commensurate with speech, but we must include in it other modes of communication between animals by means of movements or gestures. Whilst, however, differences of opinion exist as to the wide difference between man and animals with regard to the faculty of language, it is better for the present to continue making observations, for it is only by facts and illustrations that the truth can be elucidated. I will, therefore, as briefly as possible, narrate some particulars respecting my parrot.

When my parrot first came into my possession, several years ago, it was quite unlettered, and I therefore had an opportunity of observing the mode in which it acquired the accomplishment of speech. I was very much struck with its manner of learning, and the causes for its speaking on special occasions. The first seemed to resemble very much the method of children in learning their lessons, and the second to be due to some association or suggestion—the usual provocative for set speeches at all periods of human life. A parrot is

well known to imitate sounds in a most perfect manner, even to the tone of the voice, besides having a compass which no human being can approach, ranging from the gravest to the most acute note. My bird, though possessing a good vocabulary of words and sentences, can only retain them for a few months unless kept constantly in practice by the suggestive recurrence of some circumstance which causes their continual utterance. If forgotten, however, they are soon revived in the memory by again repeating them a few times, and much more speedily than any new sentence can be acquired. In beginning to teach the parrot a sentence, it has to be repeated many times, the bird all the while listening most attentively by turning the opening of the ear as close as possible to the speaker. After a few hours it is heard attempting to say the phrase, or, I should say, trying to learn it. It evidently has the phrase somewhere in store, for eventually this is uttered perfectly, but at first the attempts are very poor and ludicrous. If the sentence be composed of a few words, the first two or three are said over and over again, and then another and another word added, until the sentence is complete, the pronunciation at first being very imperfect, and then becoming gradually more complete, until the task is accomplished. Thus hour after hour will the bird be indefatigably working at the sentence, and not until some days have elapsed will it be perfect. The mode of acquiring it seems to me exactly what I have observed in a child learning a French phrase; two or three words are constantly repeated, and then others added, until the whole is known, the pronunciation becoming more perfect as the repetition goes on. I found also on whistling a popular air to my parrot that she picked it up in the same way, taking note by note until the whole twenty-five notes were complete. Then the mode of forgetting, or the way in which phrases and airs pass from its recollection, may be worth remarking. The last words or notes are first forgotten, so that soon the sentence remains unfinished or the air only half whistled through. The first words are the best fixed in the memory; these suggest others which stand next to them, and so on to the last, which have the least hold on the brain. These, however, as I have before mentioned can be easily revived on repetition. This is also a very usual process in the human subject—for example, an Englishman speaking French will, in his own country, if no opportunity occur for conversation, apparently forget it; he no sooner, however, crosses the channel and

hears the language than it very soon comes back to him again. In trying to recall poems learned in childhood or in school days, although at that period hundreds of lines may have been known, it is found that in manhood we remember only the two or three first lines of the "Iliad," the "Æneid," or the "Paradise Lost."

Then again, the circumstances which excite the bird's utterance are important to notice in relation to human speech. These are the presence of some person or object with which the words were first associated, and therefore the speech is due to suggestion. When alone, a parrot will utter a long catalogue of its sayings, more especially if it hears talking at a distance, as if wishing to join in the conversation, but at other times a particular word or phrase is only spoken when suggested by a person or object. Thus, certain friends who have addressed the bird frequently by some peculiar expression, or the whistling of an air, will always be welcomed by the same words or tune, and as regards myself, when I enter the house—for my footstep is recognised—the bird will repeat one of my sayings. If the servants enter the room Poll will be ready with one of their expressions, and in their own tone of voice. It is clear that there is a close association in the bird's mind between certain phrases and certain persons or objects, for their presence or voice at once suggests some special word. For instance, my coachman, when coming for orders, has so often been told half-past two, that no sooner does he come to the door than Poll exclaims, "half-past two." Again, having at night found her awake, and having said, "go to sleep," if I have approached the cage after dark, the same words have been repeated. Then, as regards objects, if certain words have been spoken in connection with them, these are ever afterwards associated together. For example, at dinner time the parrot, having been accustomed to have savory morsels given to her, I taught her to say "give me a bit." This she now constantly repeats, but only and appropriately at dinner time. The bird associates the expression with something to eat, but, of course, knows no more than the infant the derivation of the words she is using. Again, being very fond of cheese, she easily picked up the word, and always asks for cheese towards the end of the dinner course, and at no other time. Whether the bird attaches the word to the true substance or not I cannot say, but the time of asking for it is always correct. She is also fond of nuts, and when these are on the table

she utters a peculiar squeak; this she has not been taught, but is Poll's own name for nuts, for the sound is never heard until the fruit is in sight. Some noises which she utters have been obtained from the objects themselves, as that of a cork-screw at the sight of a bottle of wine, or the noise of water poured into a tumbler on seeing a bottle of water. The passage of the servant down the hall to open the front door, suggests a noise of moving hinges followed by a loud whistle for a cab.

It will be seen that the bird associates words or sounds with objects, and where the right names have been taught it, she may be said to know their names; and more than this may be observed—the bird invents names and the names gathered from a particular sound. Thus Poll's name for water is a sound produced by the running fluid. If one of the lower animals has this faculty of imitating noises and utters these sounds when the substances which produces them are seen, there is no objection to the theory that human beings might have acquired language in the same way. The sight of a cat makes a parrot say "mew," as the sight of a train makes a child say "puff, puff." When the child grows older he discards the primitive word, but there was a time when the infant was naming objects after the same method as the savage or the parrot.

The meaningless character of words to the ignorant is on a par with what is seen in primitive races and children. They use a word or phrase in connection with a particular object, but know nothing of its root or true meaning. Moreover, one word suggests another, so that there are many instances where two words are so constantly used in association that one is rarely heard without the other. This constitutes a great difficulty with my parrot. If a fresh sentence be addressed to it, and this begins with a word or two with which it is familiar, a very long time is taken before it can master the new one, and even then the two sentences are often made to run into one another in a most ludicrous manner. It may be remembered how Barnaby Rudge's raven was not content to stoutly declare, during the Catholic Riots, "I'm a Protestant," or "I'm a devil," but, in a cynical manner, would sometimes say, "I'm a Protestant devil," or "I'm a Protestant tea-kettle." Just in the same way, a little boy commencing to talk, and who had acquired the phrases—"naughty aunt," and "naughty grandpapa," when one of his relatives displeased him, was heard in a momentary fit of

vexation to say, "naughty aunt grandpapa." This hasty association of words without meaning appeared to me exactly the same as that with which I was familiar in the case of my parrot. The association of certain words and their suggestion of others, is common enough in human society, and is the bane of all logical discussion. The result of my observation in respect to the parrot's faculty for acquiring language is—that it has a vocal apparatus of a most perfect kind, that it can gather through its ear the most delicate intonations of the human voice, that it can imitate these perfectly by continued labour, and finally hold them in its memory; also, that it associates these words with certain persons who have uttered them; also that it can invent sounds corresponding to those which have emanated from certain objects.

As my object is in this place to confine myself to the question of language, I will not enter into other subjects which tend to show how various phenomena observed in animals and children resemble one another, although different explanations are put upon them by assuming a distinction between instinct and reason. Thus, a noise or strange object would in an instant cause Poll to drop from her perch, and we style the effect reflex. In a child the start caused by the sudden appearance of his shadow before him would be attributed to fear. If the parrot be given a piece of bread and jam, and it eats the jam and drops the bread, we smile at its cunning; but when a child does the same we introduce a moral element into the case and call the child naughty. One fact has constantly thrust itself on my attention, and that is the force of habit and the pleasure of seeing or hearing a repetition of the same act or phrases. A child will never weary of hearing the same story over and over again, and in the same way a parrot seems never to tire of hearing a speech or song it knows, and if it have been taught some playful trick, seems anxious to continue it for an indefinite time.

I think, then, in endeavouring to define the nature of the attributes of man, and to see which are the faculties he possesses in common with the lower animals, and which are peculiar to his own exalted position, we must conclude that language, in its larger sense, has its rudimentary framework in the inferior creatures.

Considering that man is an animal, that many of his functions are common to all animal life, and that we have no

power of degrading him from the position he holds, it ought to make no difference whatever to our feelings whether or not the faculty of language has its rudiments amongst inferior creatures. It is very necessary in a physiological sense to make a comparison. For my own part I should rather expect to find the greater differences between man and animals by discovering how small is their knowledge of the fine arts.

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*Case of Paralytic Idiocy with Right-sided Hemiplegia; Epilepsy; Atrophy with Sclerosis of the Left Hemisphere of the Cerebrum and of the Right Lobe of the Cerebellum.*  
By HERBERT C. MAJOR, M.D., Wakefield.

Mary Ann C., æt. 23; single; was admitted into the West Riding Asylum on the 26th February, 1864. The patient had been previously an inmate of a Workhouse, but had to be removed from thence in consequence of her violent tendencies. It was stated that she was imbecile, and suffered from epileptic fits. No definite history or facts as to parentage and condition at birth were ascertained.

On admission the patient presented very decidedly the physical appearances, as also the mental characteristics of a congenital imbecile. She was fairly well grown and developed, but the forehead was small, the lower portion of the face large, and her expression generally heavy and unintelligent. There was atrophy and paralysis of the right arm and leg, the hand being also firmly flexed, and the fingers bent into the palm. The paralysis was less in the leg than in the arm, but locomotion was imperfect and difficult. Mentally the patient manifested decided weakness. She understood what was said to her, and could reply to simple questions reasonably and intelligibly, but her vocabulary was small, and her articulation rapid and imperfect. She could neither read nor write. She showed, however, a certain interest in her surroundings, and recognised those who had charge of her. She was negligent and degraded in her habits, and could employ herself but very slightly.

For several years succeeding her reception, the patient's state would appear to have undergone no material change, the various entries in the Case-book being to the effect that she had occasional epileptic fits and attacks of excitement and ill-temper, in which she was noisy, quarrelsome, and